Libya

Last Updated: July 2009

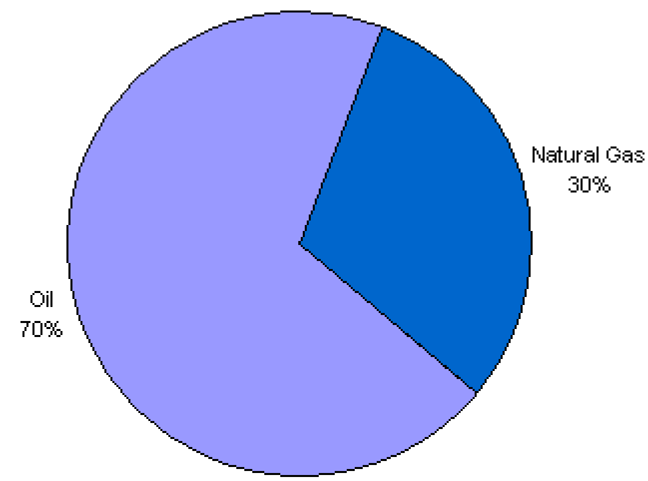
Background

Libya is a member of the Organization of Petroleum Exporting Countries (OPEC) and the country's economy relies heavily on oil exports.

The Libyan economy is heavily dependent on the hydrocarbon industry which, according to the International Monetary Fund (IMF), accounted for over 95 percent of export earnings; an estimated 85-90 percent of fiscal revenues; and over 70 percent of the country's gross domestic product (GDP) in 2008. According to the Oil and Gas Journal (OGJ), Libya holds close to 44 billion barrels of oil reserves, the largest in Africa. EIA data indicate that 2008 total oil production (crude plus liquids) was approximately 1.88 million barrels per day (bbl/d).

The Libyan government plans to increase its oil reserves, production capacity, and further develop the natural gas sector in the medium-term as the country continues to recover from over a decade of U.S. and international sanctions. The United Nations and the United States lifted sanctions on Libya in 2003 and 2004, respectively, and in 2006, the United States rescinded Libya's designation as a state sponsor of terrorism. Since then, international oil companies have stepped up investments in hydrocarbon exploration and production despite some degree of regulatory uncertainty.

Total Energy Consumption in Libya, by Type (2006)



Source: EIA International Energy Annual 2006

Libya's energy consumption mix has remained relatively constant throughout the decade, with approximately 70 percent of energy demand being met by oil and 30 percent by natural gas. However, with electricity demand on the rise, the government is planning to expand the use of natural gas to meet domestic needs while also exploiting solar and wind potential in more rural areas.

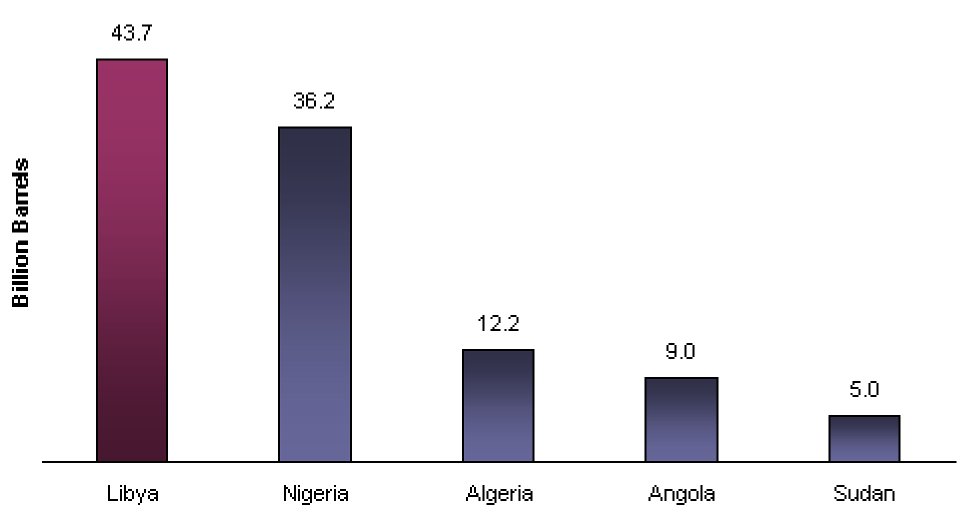
Oil

Libya has the largest proven oil reserves in Africa but most analysts agree that the country is still underexplored.

Libya, a member of the Organization of Petroleum Exporting Countries (OPEC), holds the largest proven oil reserves in Africa, followed by Nigeria and Algeria (see graph below). According to *Oil and Gas Journal (OGJ),* Libya had total proven oil reserves of 43.7 billion barrels as of January 2009, up from 41.5 billion barrels in 2008. About 80 percent of Libya's proven oil reserves are located in the Sirte basin, which is responsible for 90 percent of the country's oil output.

Libya hopes to increase oil reserve estimates with incentives for additional exploration in both established oil producing areas as well as more remote parts of the country. Recent increases in foreign investment have begun to slow as a result of uncertainties stemming from OPEC quotas, infrastructure constraints, and contract renegotiations.

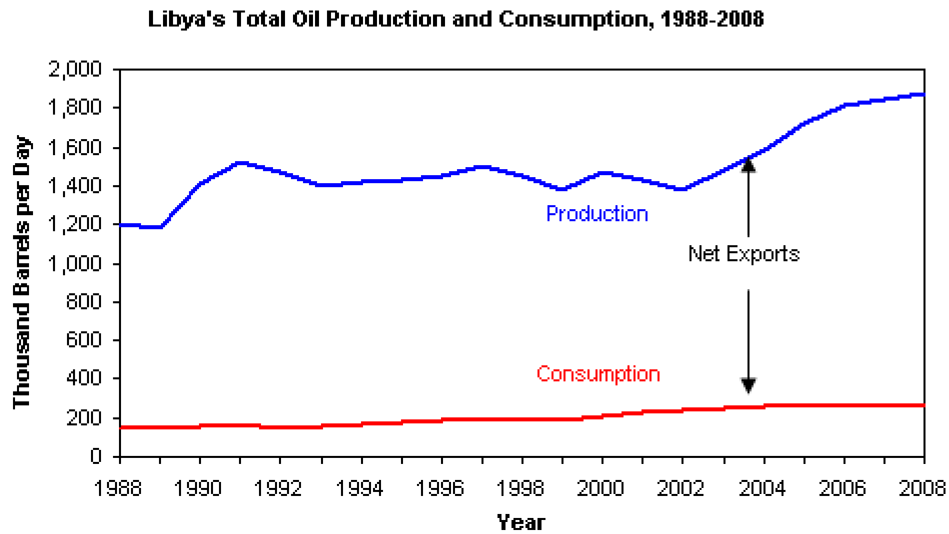
Top 5 African Proven Oil Reserve Holders, 2009



Source: *Oil and Gas Journal, January 2009*

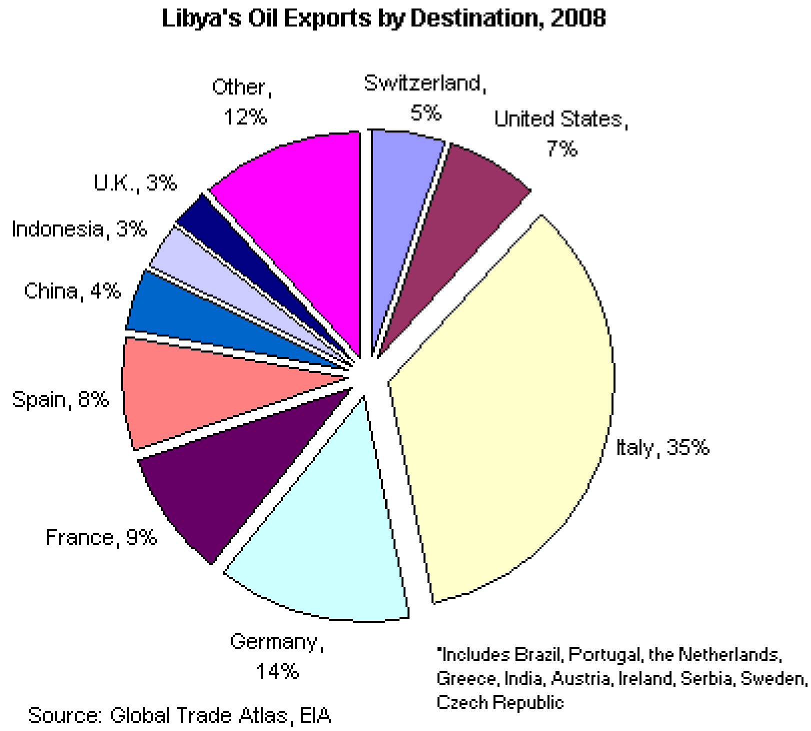
Production

Libyan oil production peaked at over 3 million bbl/d in the late 1960s and has since been in decline. The National Oil Company (NOC) would like to raise oil production capacity to 2.3 million bbl/d by 2013. While this is a significant increase from EIA's 2008 production estimates of 1.88 million bbl/d of total oil (and crude capacity estimates of 1.75) this represents a downward revision for the NOC whose earlier target for the period was 3 million bbl/d. Most of the short-term oil production increases are expected to come from enhanced oil recovery (EOR) processes. Any major new production in Libya will require additional pipeline capacity.



Exports

With domestic consumption of 273,000 bbl/d in 2008, Libya had estimated net exports (including all liquids) of 1.6 million bbl/d. According to 2008 official trade data as reported to the *Global Trade Atlas*, the vast majority of Libyan oil exports are sold to European countries like Italy (523,000 bbl/d), Germany (210,000 bbl/d), Spain (104,000) bbl/d and France (137,000 bbl/d). With the lifting of sanctions against Libya in 2004, the United States has increased its imports of Libyan oil. According to EIA estimates, the United States imported an average of 102,000 bbl/d from Libya in 2008, up from 56,000 bbl/d in 2005.



Libyan oil is generally light (high API gravity) and sweet (low sulfur content). The country's nine export grades have API gravities that range from 26^{o} – 44^{o}. While the lighter, sweeter grades are generally sold to Europe, the heavier crude oils are often exported to Asian markets.

Refining and Downstream

According to OGJ, Libya has five domestic refineries, with a combined capacity of 378,000 bbl/d. Libya's refineries include: 1) the Ras Lanuf export refinery, completed in 1984 and located on the Gulf of Sirte, with a crude oil refining capacity of 220,000 bbl/d; 2) the Az Zawiya refinery, completed in 1974 and located in northwestern Libya, with crude processing capacity of 120,000 bbl/d; 3) the Tobruk refinery, with crude capacity of 20,000 bbl/d; 4) Brega, the oldest refinery in Libya, located near Tobruk with crude capacity of 10,000 bbl/d; and 5) Sarir, a topping facility with 8,000 bbl/d of capacity.

Libya's refining sector reportedly was impacted by UN sanctions, specifically UN Resolution 883 of November 11, 1993, which banned Libya from importing refinery equipment. Libya is seeking a comprehensive upgrade to its entire refining system, with a particular aim of increasing output of gasoline and other light products. In 2009, the NOC and the Trusta Consortium (United Arab Emirates) signed an agreement for upgrades on the Ras Lanuf refinery to expand output to 240,000 bbl/d. NOC is also expected to re-tender an engineering, procurement and construction contract for upgrading the Az Zawiya refinery.

Sector Organization

Libya's oil industry is run by the state-owned National Oil Corporation (NOC). The NOC is responsible for implementing the Exploration and Production Sharing Agreements (EPSA) with international oil companies (IOCs), field development and improvements and downstream activities.

IOC participation in Libya's oil concessions was initially as high as 49 percent. However, recent changes to the production sharing agreements announced by Libya's Oil and Natural Gas Council are expected to cut IOC oil shares to as low as 20 percent. Some companies have already completed the renegotiation process with others still in the process of agreeing on terms.

Overseas Investment

In 2009, the Libyan government invested in Eni, an Italian oil company that has been operating in Libya since 1959 and is Libya's largest foreign oil producer. Through the country's sovereign wealth funds, Libya has been eyeing additional energy investments in Europe including Cyprus and Ukraine with additional interests in Africa.

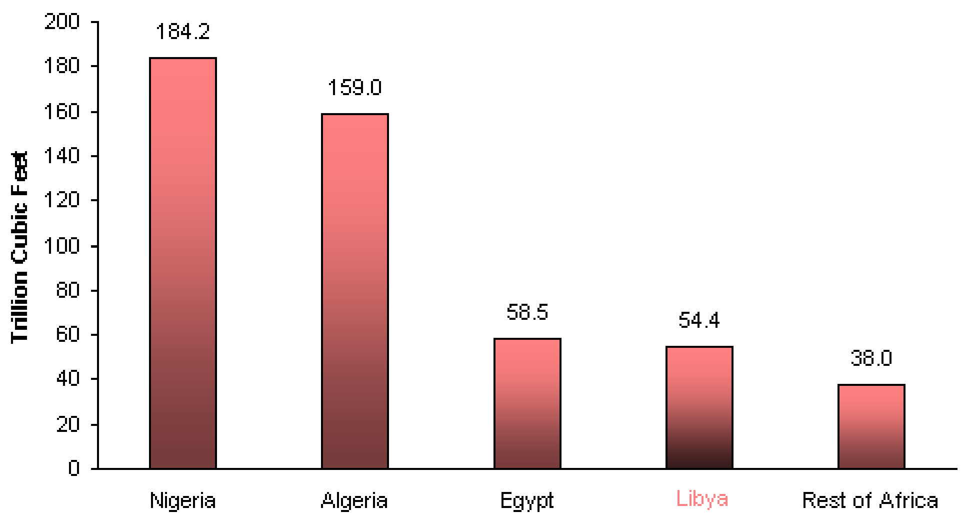
Libya also has refinery operations in Europe through its overseas oil retail arm, Tamoil. Through Tamoil, Libya is a direct producer and distributor of refined products in Italy, Germany, Switzerland, and Egypt.

Natural Gas

Libyan natural gas production and exports have increased considerably since the opening of the "Greenstream" pipeline to Europe in late 2004.

Expansion of natural gas production remains a high priority for Libya for two main reasons. Libya aims to use natural gas instead of oil domestically for power generation, freeing up more oil for export. Second, Libya has vast natural gas reserves and is looking to increase its natural gas exports, particularly to Europe. Libya's proven natural gas reserves as of January 1, 2009 were estimated at 54.4 trillion cubic feet (Tcf) by *OGJ* –but the Libyan government estimates have been cited as being more than twice that volume. Major producing fields include Attahadi, Defa-Waha, Hatiba, Zelten, Sahl, and Assumud.

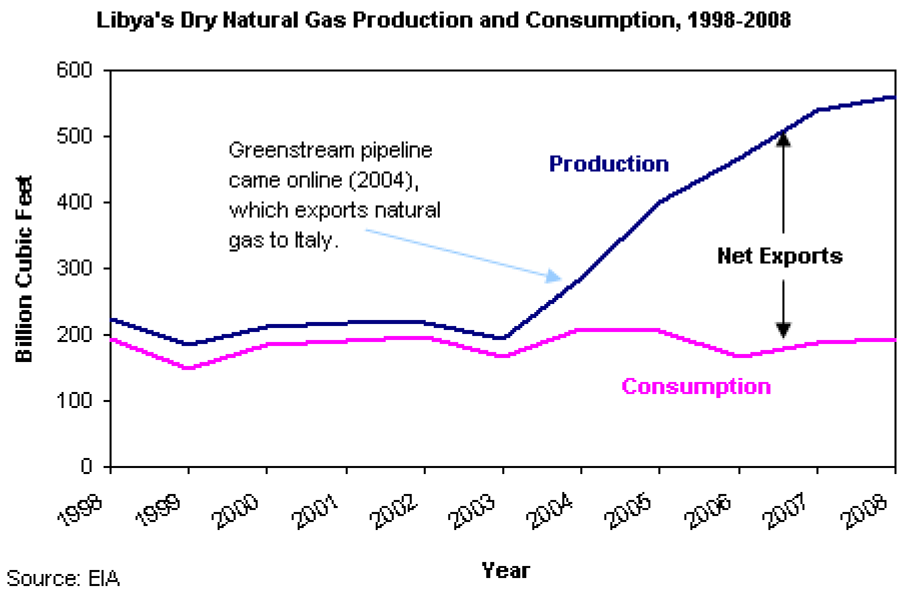
Top African Natural Gas Proven Reserve Holders, 2009



Source: *Oil and Gas Journal*

Production

Libya's natural gas production has grown substantially in the last few years. According to EIA, Libya produced about 562 billion cubic feet (Bcf) in 2008, while consuming just under 194 Bcf. Despite plans to increase natural gas consumption for electricity generation, project delays and infrastructure limitations have kept domestic consumption relatively stable over the past decade. However, the International Energy Agency (IEA) is estimating that by 2012, domestic consumption could increase by as much as 50 percent if planned pipelines and gas-fired plants come online.



Exports

In 2008, Libya exported 368 Bcf of natural gas to Europe, of this, 348.5 Bcf was exported by pipeline and the remaining 19.5 Bcf was in the form of Liquefied Natural Gas (LNG). Natural gas exports to Europe have grown considerably over the past five years through both the Western Libyan Gas Project (WLGP) and the 370-mile "Greenstream" underwater natural gas pipeline. Previously, the only customer for Libyan natural gas was Spain's Enagas.

The Greenstream pipeline came online in October 2004 and transports natural gas from Melitah, on the Libyan coast, to Sicily. From Sicily, the natural gas flows to the Italian mainland, and then onwards to the rest of Europe. Greenstream is 75 percent owned by Eni, with first flows coming from the Wafa onshore field near the Algerian border and the Bahr es Salam offshore field near Tripoli. Throughput on the Greenstream line reportedly can be boosted to 385 Bcf per year. The WLGP -- a 50/50 joint venture between Eni and NOC -- has now expanded exports to Italy and beyond.

Liquefied Natural Gas (LNG)

In 1971, Libya became the second country in the world (after Algeria in 1964) to export LNG. Since then, Libya's LNG exports have remained low, largely due to technical limitations which do not allow Libya to extract liquefied petroleum gas (LPG) from the natural gas. Libya's LNG plant, at Marsa El Brega, was built in the late 1960s by Esso and has a nominal capacity of about 125 Bcf per year. However, US sanctions prevented Libya from obtaining needed equipment to separate out LPG from the natural gas, thereby limiting the plant's output to about 19.5 Bcf (15 percent of nameplate capacity), all of which is exported to Spain (Enagas).

Profile

Energy Overview

Proven Oil Reserves (January 1, 2009)	43.7 billion barrels
Oil Production (2008)	1.88 million barrels per day, of which 1.74 million bbl was crude oil.
Oil Consumption (2008E)	273 thousand barrels per day
Net Oil Exports (2008E)	1,581 thousand barrels per day
Crude Oil Distillation Capacity (2009E)	378 thousand barrels per day
Proven Natural Gas Reserves (January 1, 2009E)	54.4 trillion cubic feet
Natural Gas Production (2008E)	562 billion cubic feet

Natural Gas Consumption (2008E)	194 billion cubic feet
Electricity Installed Capacity (2007)	6.28 gigawatts (all oil and natural gas)
Electricity Generation (2006)	22.55 billion kilowatt hours
Electricity Consumption (2006)	20.71 billion kilowatt hours
Total Energy Consumption (2006)	0.78 quadrillion Btus*, of which Oil (70%), Natural Gas (30%)
Total Per Capita Energy Consumption (2006)	132 million Btus
Energy Intensity (2006)	13,048 Btu per $2000-PPP**

Environmental Overview

Energy-Related Carbon Dioxide Emissions (2006)	53.51 million metric tons, of which Oil (74%), Natural Gas (26%)
Per-Capita, Energy-Related Carbon Dioxide Emissions (2006)	9.07 metric tons
Carbon Dioxide Intensity (2006)	0.9 Metric tons per thousand $2000-PPP**

Oil and Gas Industry

Major Oil Terminals	Es Sider, Marsa el-Brega, Tobruk, Ras Lanuf, Zawiya, Zuetina
Major Oil and Gas Fields	Al Jurf , Amal, Beda, Bouri, Bu Attifel, Defa-Waha, El Sharara, Elephant, Ghani, Gialo, Hofra, Intisar, Kabir, Mabruk, Murzuq, Nafoora, Nasser, NC-41, NC-186 fields, Omar, Sarah, Sarir, Wafa, Zella, Zenad, Zueitina
Major Refineries (capacity, bbl/d)	Ras Lanuf (220,000 bbl/d), Az-Zawiya (120,000 bbl/d), Tobruk (20,000 bbl/d), Marsah El Brega (10,000 bbl/d), Sarir (10,000 bbl/d)

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste electric power.
**GDP figures from Global Insight estimates based on purchasing power parity (PPP) exchange rates.

Links

EIA Links

EIA - Libya Country Energy Profile
OPEC Revenues Fact Sheet

U.S. Government

CIA World Factbook- Libya
Library of Congress Country Study on Libya
U.S. State Department Background Note - Libya
U.S. State Department Consular Information Sheet - Libya
U.S. Treasury Department's Office of Foreign Assets Control

Other Links

BBC Country Profile -- Libya
Libya Daily
Libya: Our Home
Libya Online Links Page
MBendi Libya Country Profile
National Oil Corporation of Libya
University of Pennsylvania - Libya Page

Sources

Africa Oil and Gas
AFX European Focus
Agence France Presse
AP Worldstream

CIA World Factbook
Deutsche Bank
Dow Jones Interactive
Dow Jones Newswires
Economist Intelligence Unit ViewsWire
Energy Day
Energy Intelligence Group
Financial Times Energy Newsletters
Global Insight
Hart's Africa Oil and Gas
Hart's E & P Daily
Houston Chronicle
Lloyd's List
Middle East Economic Survey (MEES)
Oil Daily
Oil and Gas Journal
Petroleum Economist
Petroleum Intelligence Weekly
Platt's Oilgram News
Reuters
World Gas Intelligence

Contact Info

cabs@eia.doe.gov
(202)586-8800
cabs@eia.doe.gov